IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, Alexandria VA 22313-1450 on December 14, 2004.

Mary Ann Copas, Secretary

In the Application of Wolfgang Peter et al

Ser.No.: 09/651,797

Filed: August 30, 2000

For: METHOD AND APPARATUS FOR TREATMENT OF METALLIC WORKPIECES

Art Unit: 1742

Examiner: Sikyin Ip

Customer #: 30996

Commissioner for Patents
PO Box 1450
Alexandria VA 22313-1450

MAIL STOP: APPEAL BRIEF - PATENTS

Sir:

Appellant hereby appeals to the Board of Patent Appeals and Interferences from the decision dated July 14, 2004 of the Examiner finally rejecting claims 6 - 20.

1. According to the requirements of CFR 1.192, appellant herewith encloses an Appeal Brief in triplicate.

2. The fee of $500.00 is enclosed in payment for filing such Appeal Brief.

3. Appellant does not wish to arrange an oral hearing for this appeal.

If the amount enclosed should be insufficient, please charge the remainder to Deposit Account No. 02-1653.

Respectfully Submitted,

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for applicant(s)

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PO Box 1450
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APPELLANTS' APPEAL BRIEF

Dear Sir:

Pursuant to 37 CFR 1.192, Appellants hereby file an Appeal Brief in the above-identified application. This Appeal Brief is accompanied by the requisite fee set forth in 37 CFR 1.17(c).

(1) REAL PARTY IN INTEREST

The real party in interest is the assignee, Ipsen international GmbH.

(2) RELATED APPEALS AND INTEREFERENCES

There are no Appeals or Interferences that will directly affect or be directly affected by or have a bearing on the Board's decision in the pending Appeal.

(3) STATUS OF CLAIMS

Claims 6 and 8-20 are pending in the application and have been finally rejected. Claims 1 - 5 have been withdrawn from consideration as being drawn to a non-elected invention and claim 7 has been cancelled.

(4) STATUS OF AMENDMENTS

In response to the final rejection dated July 14, 2004, a Notice of Appeal was submitted on October 14, 2004. No amendment has been filed subsequent to the Final Rejection dated July 14, 2004.

(5) SUMMARY OF THE INVENTION

As stated in independent claim 6, the present invention provides an apparatus for the thermal treatment of metallic work pieces or a plurality of stacks formed of metallic work pieces arranged one above the other. The apparatus recited in claim 6 comprises a quenching chamber for receiving pre-heated work pieces, a quenching gas for cooling the same, and guide channels each for guiding a directed flow of quenching gas about a respective one of the work pieces individually or a stack of the work pieces. Each of the guide channels has a closed lateral surface and a length that corresponds at least to a height of the respective individual or stacked work pieces. Also, claim 6 recites that each of the guide channels surrounds a respective one of the individual work pieces or the stacks of the work pieces along a direction of flow of the quenching gas such that the respective guide channel guides the quenching gas to flow longitudinally past the respective one of the individual work pieces or the stacks of the work pieces. Furthermore, claim 6 recites a quenching gas closed loop circulation assembly associated with the quenching chamber for circulating the quenching gas along a closed loop circulation path

through the quenching chamber.

The guide channels of the apparatus recited in claim 6 advantageously guide the quenching gas in an individual manner around each work piece in a substantially laminar flow which promotes intense and uniform quenching of the work pieces. Since each work piece to be quenched is enclosed by a respective one of the guide channels, the directed flow of quenching gas flowing through the respective guide channel cannot influence and, thus, generate turbulence with, the directed flows of quenching gas flowing through the adjacent guide channels.

As further provided in claim 8, the length of the guide channels projects beyond a height of the individual or stacked work pieces by an amount equal to half of a diameter or width of the work pieces. As further provided in claim 9, the guide channels have a cylindrical shape or are adapted to the geometry of the work pieces to be cooled.

As stated in Independent claim 17, the present invention provides an apparatus for the thermal treatment for metallic work pieces including a quenching chamber for receiving pre-heated work pieces and a quenching gas for cooling the same and means for guiding individual substantially laminar flows of quenching gas around the work pieces in a manner such that each respective individual flow of quenching gas around a respective one of the work pieces remains out of contact with the other respective individual flows of quenching gas during its flow around the respective work piece, wherein each individual flow of quenching gas is substantially laminar due to the absence of turbulence-generating mixing which would otherwise occur if the flows of quenching gas were not prevented from mixing with one another. Additionally, claim 17 recites that the means for guiding individual substantially

laminar flows of quenching gas includes a plurality of guide channels each having a closed lateral surface and being disposable in surrounding relationship around a respective one of the work pieces for directing a substantially laminar flow of quenching gas around the respective work piece.

The apparatus recited in claim 17 advantageously guides the quenching gas in an individual manner around each work piece in a substantially laminar flow that promotes intense and uniform quenching of the work pieces. Since the apparatus recited in claim 17 includes means for guiding individual substantially laminar flows of quenching gas around the work pieces in a manner such that each respective individual flow of quenching gas around a respective one of the work pieces remains out of contact with the other respected individual flows of quenching gas during its flow around the respective work piece, each directed flow of quenching gas flowing through a respective piece cannot influence and, thus, generate turbulence with, the directed flows of quenching gas flowing past the other work pieces.

(6) ISSUES

a.) Whether Claims 6 and 8-16 are unpatentable under 35 U.S.C. 103(a) over the single applied reference G9400222.3?

b.) Whether Claims 17-20 are unpatentable over the single applied reference G9400222.3?

The Examiner has indicated that claim 6, and claims 8 - 16 dependent therefrom, are unpatentable under 35 U.S.C. 103(a) over the single applied reference G9400222.3. However, as will be explained in greater detail hereinafter, it is respectfully submitted that the single applied reference G9400222.3 neither teaches nor discloses the apparatus recited in claim 6 nor any of claims 8 - 16

dependent therefrom. Additionally, the Examiner has indicated that claim 17, and claims 18 - 20 dependent therefrom, are unpatentable under 35 U.S.C. 103(a) over the single applied reference G9400222.3. However, as will be explained in greater detail hereinafter, it is respectfully submitted that the single applied reference G9400222.3 neither teaches nor discloses the apparatus recited in claim 17 nor any of claims 18 - 20 dependent therefrom.

(7) ARGUMENT

As indicated previously, the present invention provides an apparatus for the thermal treatment of metallic work pieces or a plurality of stacks formed of metallic work pieces arranged one above the other, wherein the apparatus comprises a quenching chamber for receiving pre-heated work pieces, a quenching gas for cooling the same, and guide channels each for guiding a directed flow of quenching gas about a respective one of the work pieces individually or a stack of the work pieces.

The Examiner has rejected Claim 6 and claims 8 - 16 dependent therefrom, as well as claim 17 and claims 18 - 20 dependent therefrom, as being unpatentable under 35 U.S.C. 103(a) over the single applied reference G9400222.3. In support of the rejections of these claims, the Examiner asserts that the single applied reference G9400222.3, in Figure 1, discloses a cooling chamber with nozzle plates (10) and cooling plates (11). The nozzle plates can be lowered onto the pieces positioned in the cooling chamber (in the Final Rejection dated 07/14/2004, reference is had to Page 4, last paragraph, of the English translation of the single applied reference G9400222.3). The nozzle plate (10) is placed at the top of the workpieces to make cooling gas flow in the lengthwise direction and [there is] no rebounding flow, which,

according to the Examiner, reads on laminar cooling. The cooling plates (11) are formed to a contour of the work piece loads such as a tunnel (reference is had in the Final Rejection dated 07/14/2004 to Page 4, second full paragraph, of the English translation of the single applied reference G9400222.3). Cooling gas is regenerated by passing through gas channels (in the Final Rejection dated 07/14/2004, reference is had to Page 2, second full paragraph, of the English translation of the single applied reference G9400222.3). When prior art compounds essentially "bracketing" the claimed compounds (here, the structure) in structural similarity are all known, one of ordinary skill in the art would clearly be motivated to make those claimed compounds in searching for new products in the expectation that compounds similar in structure will have similar properties (case citations omitted). Additionally, the Examiner notes that Figure 2 of the single applied reference G9400222.3 uses lateral nozzle plates (10) having the cooling gas flow in rebounding flow (in the Final Rejection dated 07/14/2004, reference is had to Page 6, first full paragraph, of the English translation of the single applied reference G9400222.3). But, alleges the Examiner, when the nozzle plate (10) is placed above the workpiece (4), the cooling gas would flow in the lengthwise direction without rebounding. Thus, according to the Examiner, when the nozzle plates are placed above the workpieces, the cooling gas flow is without rebounding and reads on laminar flow.

Appellants submit that the apparatus, as set forth in either of the two finally rejected independent claims 6 and 17, is neither taught nor disclosed by the single applied reference G9400222.3 and, thus, the two finally rejected independent claims 6 and 17, and the claims respectively dependent therefrom, are not unpatentable

over the single applied reference G9400222.3. The apparatus of the present invention is a solution to the challenge of providing an apparatus for the thermal treatment of metallic workpieces that can, to the greatest extent possible, prevent the occurrence of uneven thermal treatment of such metallic workpieces, as such uneven thermal treatment disadvantageously leads to undesirable non-uniform shrinkage of the metallic workpieces. The inventive apparatus of the present invention offers a solution in that the inventive apparatus provides substantially laminar flows of quenching gas around each respective workpiece as opposed to providing turbulent, non-laminar flows of quenching gas that would otherwise more intensely cool, in a random manner, certain portions of a workpiece than other portions of the workpiece, thus leading to individual, non-uniform cooling regimes for each workpiece relative to the other workpieces. A key structure of the inventive apparatus that effects the desirable substantially laminar flows of quenching gas around each respective workpiece is the means that is disposable in surrounding relationship around each respective workpiece.

In view of the problem addressed by the apparatus of the present invention - namely, the problem of non-uniform heating of a group of workpieces due to turbulent, non-laminar flows of quenching gas, it is submitted that there must be some teaching or motivation in the prior art to lead one of ordinary skill in the art to refer to the single applied reference G9400222.3. However, Appellants submit that the single applied reference G9400222.3 itself fails to provide any such teaching or motivation. The single applied reference G9400222.3 discloses at least two embodiments of a quenching device wherein each disclosed embodiment deliberately includes a structure that produces turbulent, non-laminar flows of

quenching gas. Specifically, with respect to the embodiment of Figure 1 of the single applied reference G9400222.3, as set forth on Page 6 of the translation thereof, this embodiment includes nozzle plates (10) each of which directs a flow of quenching gas onto a respective workpiece (4) such that turbulent flow inherently results. The cooling plates (11) of the embodiment of Figure 1 of the single applied reference G9400222.3 cannot transform the flows of quenching gas injected through the nozzles of the nozzle plates (10) from turbulent flows into (substantially) laminar flows. The single applied reference G9400222.3 does not itself even hint at the desirability of having the nozzle plates (10) provide such a laminar flow-promoting purpose; instead, the single applied reference G9400222.3 specifically discloses that the nozzle plates (10) are instead provided for the purpose of optimizing the cooling of the workpiece (4) by, for example, having the nozzle plates (10) serve as heat-exchange surfaces close to the workpiece surfaces.

With regard to the argument advanced to support the final rejection of claims 6 and 8 - 20 of the present application that each cooling plate (11) of the single applied reference G9400222.3 is formed as a "tunnel" that individually surrounds a respective workpiece (4), this is an incorrect argument for the reason that the single applied reference G9400222.3 does not, in fact, teach or suggest any such individual "tunnel" structure. This can be seen, for example, by examining the structure disclosed on page 4 of the English translation of the single applied reference G9400222.3. On that page 4, it is disclosed that, in the case of long slender parts such as borer blanks, a "tunnel" can be formed, in which the upper plate sections form nozzle plates while the plate sections at the sides form cooling plates. However, the single applied reference G9400222.3 provides no hint that this "tunnel"

is a tunnel for surrounding an individual workpiece (4) or, instead, is a tunnel for enclosing a plurality of workpieces (4) that are to be cooled. In fact, page 5, second full paragraph, of the English translation of the single applied reference G9400222.3 states that the nozzle and cooling plates 10, 11 or the combination Plate 12 (with respect to the other embodiment of the English translation of the single applied reference G9400222.3) is inserted into the cooling chamber on lateral guide rails. This is a clear indication that the term "tunnel" in the single applied reference G9400222.3 refers to a tunnel for enclosing a plurality of workpieces (4), as it would otherwise not be possible, if the cooling plates 11 were instead in the form of individual tunnels, to insert the cooling plates 11 into the cooling chamber on the lateral guide rails, for the reason that the lateral movement of the individually tunnel-configured cooling plates 11 along the lateral guide rails would then be blocked by the first row of the workpieces 4.

In view of the fact that there is no teaching or hint in the single applied reference G9400222.3 of the desirability of reducing or completely suppressing turbulence generating flow around an individual work piece 4 and, moreover, in view of the fact that the single applied reference G9400222.3 specifically discloses a structure (the nozzle plate (10)) that, in fact, produces a turbulent flow, it is submitted that one of ordinary skill in the art would have no motivation to turn to the single applied reference G9400222.3 in solving the problem addressed by the apparatus of the present invention. Additionally, even if there were some motivation for one of ordinary skill in the art to turn to the single applied reference G9400222.3 in solving this problem, the structures disclosed in the single applied reference G9400222.3 simply do not overcome this problem.

Thus, Appellants submit that the apparatus recited in either of the two finally rejected independent claims 6 and 17 is neither taught nor disclosed by the single applied reference G9400222.3. Thus, a rejection of claim 6, and Claims 8-16 depending from claim 6, cannot properly be based upon the single applied reference G9400222.3. Additionally, a rejection of Claim 17, and Claims 18-20 depending from Claim 17 cannot properly be based upon the single applied reference G9400222.3.

In view of the foregoing discussion, it is respectfully requested that the Honorable Board of Patent Appeals and Interferences overrule the final rejection of Claims 6 and 8-20 over the cited art, and hold that the Appellants' claims be allowable over such art.

Respectfully Submitted,

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(8) APPENDIX

1 – 5 - withdrawn

6. (previously presented) An apparatus for the thermal treatment of metallic workpieces or a plurality of stacks formed of metallic workpieces arranged one above the other, said apparatus comprising:

a quenching chamber for receiving preheated workpieces and a quenching gas for cooling same;

guide channels each for guiding a directed flow of quenching gas about a respective one of said workpieces or said stacks of said workpieces, wherein each of said guide channels has a closed lateral surface and a length that corresponds at least to a height of the respective individual or stacked ones of said workpieces and each of said guide channels surrounds a respective one of said individual workpieces or said stacks of said workpieces along a direction of flow of said quenching gas such that the respective guide channel guides said quenching gas to flow longitudinally past the respective one of said workpieces or said stacks of said workpieces; and

a quenching gas closed loop circulation assembly associated with said quenching chamber for circulating said quenching gas along a closed loop circulation path through said quenching chamber.

7. (cancelled)

8. (previously presented) An apparatus according to claim 6, wherein the length of said guide channels projects beyond a height of said individual or stacked workpieces by an amount equal to half of a diameter or width of said workpieces.

9. (original) An apparatus according to claim 6, wherein said guide channels have a cylindrical shape or are adapted to the geometry of said workpieces that are to be cooled.

10. (original) An apparatus according to claim 9, wherein said guide channels are cylindrical, having a circular, square or polygonal cross-section.

11. (original) An apparatus according to claim 6, wherein said guide channels are interconnected to form a channel system.

12. (original) An apparatus according to claim 6, which includes means for displacing said guide channels in said quenching chamber.

13. (original) An apparatus according to claim 12, wherein said guide channels are replaceable.

14. (original) An apparatus according to claim 6, wherein said quenching chamber is provided with an inlet for said quenching gas, wherein said inlet rests sealingly against said guide channels.

15. (original) An apparatus according to claim 6, wherein said guide channels are made of a heat-resistant material.

16. (original) An apparatus according to claim 15, wherein said guide channels are made of steel, iron alloys or nickel alloys.

17. (previously presented) An apparatus for the thermal treatment of metallic workpieces, said apparatus comprising:

a quenching chamber for receiving preheated workpieces and a quenching gas for cooling same; and

means for guiding individual substantially laminar flows of quenching gas around said workpieces in a manner such that each respective individual flow of

quenching gas around a respective one of said workpieces remains out of contact with the other respective individual flows of quenching gas during its flow around the respective workpiece, wherein each individual flow of quenching gas is substantially laminar due to the absence of turbulence-generating mixing which would otherwise occur if the flows of quenching gas were not prevented from mixing with one another, said means for guiding individual substantially laminar flows of quenching gas including a plurality of guide channels each having a closed lateral surface and being disposable in surrounding relationship around a respective one of said workpieces for directing a substantially laminar flow of quenching gas around the respective workpiece.

18. (previously presented) An apparatus according to claim 17, wherein said guide channels have a length that corresponds at least to a height of individual or stacked ones of said workpieces.

19. (previously presented) An apparatus according to claim 18, wherein the length of said guide channels projects beyond a height of said individual or stacked workpieces by an amount equal to half of a diameter or width of said workpieces.

20. (previously presented) An apparatus according to claim 17, which includes means for displacing said guide channels in said quenching chamber.